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EXAMINER

WEBB, GREGORY E

| ART UNIT | PAPER NUMBER |
|----------|--------------|
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1751

DATE MAILED: 03/24/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/822,804

Applicant(s)

PETERS, DARRYL W.

Examiner

Gregory E. Webb

Art Unit

1751

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11 August 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☐ Claim(s) 1-26 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☐ Claim(s) 1-11, 13, 14, 16-22 and 26 is/are rejected.
- 7) ☐ Claim(s) 12, 15 and 23-25 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 804,604,404.
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

Claims 1-26 are rejected under 35 U.S.C. 102(b) as being anticipated by

Claims 1-11, 13, 14, 16-22, and 26 are rejected under 35 U.S.C. 102(e) as being anticipated by Masuda, Kaoru (US20020164873).

Concerning the claimed microstructure substrate, Masuda, Kaoru teaches the following:

Art Unit: 1751

12. A process for removing residues from a semiconductor wafer comprising steps of: ashing a resist on a surface of the semiconductor wafer; and contacting the semiconductor wafer with supercritical CO.sub.2 including a compound having a hydroxyl group and a fluoride of formula NR₁R₂R₃R₄F, where R represents a hydrogen or alkyl group, so as to remove ashed resist from the semiconductor wafer.(see claim 12)

Concerning the carbon dioxide, supercritical state, additive for removing residues, inhibitor for suppressing residues and the tetramethylammoniumfluoride, Masuda, Kaoru teaches the following:

[0025] The fluoride is used as the additive to supercritical CO.sub.2 in the presence of a compound having a hydroxyl group, e.g., alcohol (such as ethanol, methanol, n-propanol, isopropanol, n-butanol and isobuthanol, phenol), glycol (such as ethylenglycol and methylenglycol and polyethylenglycol). The alcohol is preferred because it effectively dissolves or disperses the fluoride, such as TMAF, homogeneously in supercritical CO.sub.2. Among alcohol, ethanol is preferable because a larger amount of the fluoride, such as TMAF, can be dissolved in supercritical CO.sub.2 by the presence of the ethanol. The concentration of the compound in supercritical CO.sub.2 depends on the kind and concentration of the fluoride, and the kind of the residue.

Approximately, the compound is preferably included in supercritical CO.sub.2 in the range from 1 wt % to 20 wt % of the remover.

Art Unit: 1751

Concerning the co-solvent for dissolving, polyhydric alcohol and the claimed alcohol, Masuda,

Kaoru teaches the following:

[0022] According to the present invention, the co-solvent is added to CO.sub.2 together with the additive. The co-solvent of the present invention is a compound having an affinity to both CO.sub.2 and the additive. Such a co-solvent dissolves or disperses the additive homogeneously in the pressurized CO.sub.2 in fluid condition. An alcohol, dimethylsulfoxide or a mixture thereof is used as the co-solvent. The alcohol may be any alcohol, e.g. ethanol, methanol, n-propanol, iso-propanol, n-butanol, iso-butanol, diethyleneglycolmonomethyleter, diethyleneglycolmonoethyleter, and hexafluoro isopropanol, preferably ethanol and methanol.

Karoru fails to teach the dimethylacetamide and the propylene glycol.

Claims 1-7, 13, 14, 17-21 are rejected under 35 U.S.C. 102(b) as being anticipated by Vaartstra (US6149828).

Concerning the claimed microstructure substrate, carbon dioxide and the supercritical state,

Vaartstra teaches the following:

A supercritical etching composition and method for etching an inorganic material of a semiconductor-based substrate are provided. The method

Art Unit: 1751

includes providing a semiconductor-based substrate having an exposed inorganic material and exposing the substrate to the supercritical etching composition, whereby exposed inorganic material is removed from the substrate. In one embodiment, the supercritical etching composition includes a supercritical component, which is not capable of etching a particular exposed inorganic material, and a nonsupercritical etching component, which is capable of etching the particular exposed inorganic material. In another embodiment, the supercritical etching composition includes a supercritical component, which is capable of etching the particular exposed inorganic material.(par#1)

Concerning the quaternary compound, Vaartstra teaches the use of various additive including tetramethyl ammonium fluoride (see col. 6, lines 45-65)

Concerning the cosolvent, Vaartstra teaches the use of non-supercritical solvents including hexafluoroacetyl acetone (see cols. 5-6).

Conclusion

Claims 12, 15, 23-25 are objected to for being dependent upon a rejected claim but would be allowable pending the incorporation of the limitations of the independent claim.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gregory E. Webb whose telephone number is 571-272-1325. The examiner can normally be reached on 9:00-17:30 (m-f).

Art Unit: 1751

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Douglass McGinty can be reached on (571)272-1029. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A handwritten signature in black ink, appearing to read 'G. Webb', with a large loop at the start and several smaller loops and strokes extending to the right.

Gregory E. Webb
Primary Examiner
Art Unit 1751

gew